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USSR Report

TRANSPORTATION

No. 58

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AIR

SECONDARY RADAR SYSTEM PRINCIPLES, IMPROVEMENTS

Moscow GRAZHDANSKAYA AVIATSIYA in Russian No 7, Jul 81 pp 24-25

[Article by V. Trikoz, Ministry of Civil Aviation Radio Electronic Equipment Administration deputy director and State Prize Winner: "Secondary Radar"]

[Text] The basis of all automated air traffic control systems without exception is secondary radar facilities which, among the various facilities for obtaining information on conditions in the air, have, it may be said, acquired supreme importance.

The very principle of secondary radar has been known for a long time--as early as during the Second World War systems for identifying one's own and enemy aircraft were constructed with it. The transmitter of a ground radar sends, in the direction of the aircraft identified, an interrogation pulse, to which an airborne transceiver reacts with a coded response signal. Modern secondary radar systems also operate according to this system. It must be said that at the present time work on their improvement is being carried out quite actively throughout the entire world and already the overwhelming majority of aircraft and ground air traffic control centers have been furnished with secondary radar facilities.

What are the reasons for this so obvious preference given to this method of obtaining information? It is entirely a question of its important advantages. The use of an airborne transponder makes it possible to reduce to a great extent the power of the ground transmitter as compared with a primary radar transmitter making possible the same effective range. The powerful response signal makes it possible to use less-sensitive receiving equipment on the ground and to expand the service area. Finally (and this is perhaps the most important) the signal of the airborne transponder can contain all the additional information necessary for a controller.

However, secondary radar by no means excludes the use of traditional facilities based on the reception of signals echoed from aircraft. Primary radars in fact give a total picture of conditions in the air in two dimensions and they make it possible to represent these conditions clearly on panoramic displays. Therefore systems of both kinds are usually used in conjunction. And in order for their operation to be precise and coordinated, the radar transmitters are switched on in strict synchronization. Matching in terms of azimuth is achieved either by the structural combining of both antenna systems or by using servo drives.

Several types of ground radars having a built-in secondary channel (the "Irtysh," "Ekran," "Onega," "Utes" and "Skala") and the "Koren'-AS" secondary radar are being used at the present time in Aeroflot [Main Administration of the Civil Air Fleet]. The last has two modifications, used both in airfield zones and on airways: built-in and self-contained. This makes it possible to select the optimum variant for combining with a primary radar. When a secondary radar is built into a primary, the accuracy of determining the coordinates of aircraft is improved, the equipment of the complex is made less expensive, and the number of re-echoed signals (noise) is reduced. And the self-contained use of a secondary radar makes it possible to improve the already available inventory of radar equipment.

Transponders have been installed on practically all Aeroflot jet aircraft. In addition to the transceiver and antennas the structure of this equipment includes a coder-decoder. Its job is to recognize and identify the signal of a ground interrogator, as well as to form a response code containing information on the side number of the aircraft, flight altitude, remaining fuel in the tanks, etc. This information arrives from sensing devices on board. For example, altimeters report on the flight altitude. In flight along an airway a report is made to the ground regarding the true barometric altitude, and when in the zone of an airfield, the relative altitude. In any case the error in indication of the altitude by means of ground indicators as compared with airborne instruments is not greater than 40 m.

The information received on the ground, the automatic obtainment of which is made possible by the secondary radar system, after appropriate processing arrives at the controller's console. Information on coordinates is displayed on the screen of the display in the form of a traditional analog marker matched in terms of range and azimuth with the marker of the primary radar. The side number (or individual identification code in the IKAO [International Civil Aviation Organization] system) and the current altitude either light up on a special indicator or are "keyed" in the form of a log on the display's screen to the mark of a specific aircraft.

In order for additional information to be displayed, it is necessary to set the system to automatic tracking. Modern equipment makes it possible to set various operating modes. For example, with the automatic setting all aircraft are tracked which are equipped with transponders and which are in the effective range of the secondary radar system. The maximum number of logs which can be displayed is determined by the capacity of the equipment's channels. Automatic tracking in a zone is distinguished by the fact that in this case only those aircraft are tracked which lie within a specific airspace. The controller can also assign the equipment the task of tracking any single aircraft. For this purpose he enters (by means of a dial) its side number into a storage unit. When the expected aircraft appears in the system's effective range, information on it appears automatically on a panel or indicator. Finally, position tracking is provided for. For this purpose a marker device has been designed by means of which the controller matches the light marker on the display's screen with the aircraft of interest to him.

This ability to select methods of tracking makes it possible to establish the optimum amount of information to be displayed, screening out the superfluous factors which distract one's attention.

Secondary radar systems are constantly being improved. The main ways of developing them further have been determined by the growing requirements for improvement of the precision, noise immunity, resolution, speed of response and operating reliability of automated air traffic control equipment. In the process of improvement it is first necessary to eliminate shortcomings discovered in operation. Let us name the most important of these.

As yet a limited carrying capacity is characteristic of secondary radar. The reason is that each airborne transponder is usually in the "field of view" of several ground interrogators which are not synchronized with one another. Therefore, mutual interference is possible and as a result of this the loss of information. For the purpose of increasing the carrying capacity it is necessary to lower the power of ground interrogators, to use devices for suppressing the side lobes of the beams of transmitting antennas, and to equip transponders with noise suppressing filters.

Another disadvantage of existing systems is their limited resolution. The problem is that when several aircraft strike a single beam of a ground interrogator the superposition of response signals and distortion of the code are possible. The main method of improving resolution while maintaining the existing principles of coding is the optimum distribution of interrogators in relation to airways.

No small concern in the distribution of radars is caused by echoing of their signals from local objects (buildings, hangars, antennas of other radio equipment and the like). In addition to choosing the optimum location for a radar, here it helps to raise the antenna's radiation pattern and to automatically lower the gain of the receiver when the antenna turns in the direction of a re-echoing local object. The latter measure, incidentally, has proven quite effective for the Moscow area air traffic control system.

The elimination of these shortcomings and the further improvement of secondary radar systems obviously must proceed along two lines. The first is the introduction of innovations making it possible to improve the performance of existing equipment. But the root problem of increasing the carrying capacity can be solved only in part by this method. For the complete satisfaction of the information needs of automated systems of the future, development along the second line is necessary, which calls for changing to new more advanced design principles.

One promising new design principle for secondary radar systems is the individual address interrogation of each aircraft. In systems in existence at the present time space indication has been used as the basis: response signals are transmitted by the transponders of all aircraft at which the beam of the radar interrogator is aimed. With individual interrogation each aircraft is assigned its own address code (number) to which the airborne transponder responds. Conversion to the address mode of operation not only makes it possible to eliminate practically all limitations and shortcomings, but in addition solves a number of problems relating to guaranteeing the safety of flights, in particular, of constructing a system for warning of the dangerous approach of aircraft to one another and of creating a high-speed "ground-airborne-ground" data transmission line.

The amount of information which can be transmitted by the transponder can be increased considerably in proportion to the development of airborne piloting and navigation equipment.

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LITHUANIA'S AUTOMOTIVE INDUSTRY REVIEWED

Minister's Analysis

Vilnius KOMMUNIST in Russian No 5, May 81 pp 26-32

/Article by I. Chernikov, minister of automotive transport and highways of the Lithuanian SSR: "The Contribution of Lithuania's Automotive Transport Workers"; passages enclosed in slantlines printed in boldface/

> /Text/ /"Increase the freight turnover of general-purpose automotive transport by a factor of 1.3--1.4 and the passenger turnover of general-purpose buses by 16--18 percent."/
>
> (from the "Basic Directions of the USSR's Economic and Social Development for the Years 1981--1985 and for the Period until 1990")

Like all Soviet people, the automotive transport workers have accepted with profound satisfaction the decisions of the 26th CPSU Congress, the Party's plans for the coming five-year plan, aimed at further augmenting our society's material and spiritual abundance and increasing the people's prosperity. The new tasks require substantial improvement in the work of all transport. This also places an enormous responsibility on Soviet Lithuania's automotive transport, which within the republic's over-all transport system carries approximately 90 percent of all national-economic freight. Our ministry's transport alone daily hauls more than 600,000 tons of various types of freight and about two million passengers. The general-purpose motor pool operates significantly more productively than departmental automotive transport. Though comprising only 21 percent of the pool of all trucks in the republic, it hauls 53 percent of the freight accounted for by automotive transport.

In attaining further increases in the technical and economic indicators of their work, Lithuania's automotive transport workers have achieved quite good results. The assignment for the years 1976--1980 for freight haulage was overfulfilled by 6.3 million tons and for passenger haulage--by 25.4 million persons. Freight turnover by general-purpose automotive transport during the five-year period grew by more than 20 percent, while passenger turnover increased by 12 percent. The taxi motor pool finished the five-year plan period with a large over-fulfillment of its plan assignment.

The successes achieved in 1980 and the 10th Five-Year Plan have allowed us to gain first place in the inter-republic (zonal) socialist competition among the ministries of automotive transport and road maintenance of the Baltic Area, the Belorussian, and Moldavian SSR's. Our ministry has been awarded the Challenge Red Banners of the Central Committee of the Trade Union of Automotive Transport and Highway Workers.

The attainment of these results was facilitated to a large extent by the successful and persistent labor of the following groups: the Shyaulyay ATP /Automotive Transport Enterprise/-1, Vilnius Bus and Taxi Pools, as well as the 3rd and 8th ATP's, Kaunas Bus Pool and 4th ATP, the Shyaulyay and Panevezhius Bus Pools, the Kretinga, Pakruoy, Pasval, Radvilish, and Skuodas Automotive Transport Enterprises.

The Communist Party of Lithuania Central Committee and the republic's government are paying constant attention to the development and improvement of automotive transport.

During the last few years in Lithuania a number of major, up-to-date, automotive transport enterprises have been built in Lithuania. Not too long ago the workers of the Kaunas Taxi Pool held a housewarming. This was already their second multistorey garage, designed for 800 passenger autos. Construction has been completed on the Kaunas Automotive Transport Enterprise No 1, a bus pool in Klaipeda, and a plant for repairing passenger autos in Panevezhius, as well as 8 bus stations. At many automotive enterprises new warehouses, fuel and service stations, mechanized washing complexes, and everyday convenience facilities have been built. There is essentially not a single automotive enterprise where during the five-year plan just past construction and modernization have not taken place, ensuring the expansion and improvement of the production-technical base, as well as improvements in the working conditions and daily life of the employees.

With each passing year there is growth in the effectiveness of utilizing automotive transport; the delivery of goods and passengers is being speeded up, and the entire transport process is undergoing improvement. Centralized freight hauls are being developed, and their proportion now comprises 86 percent of the total. These centralized hauls are making more and more extensive use of trucks with detachable semi-trailers, which permit a considerable speed-up in the transport process and a reduction to the minimum of idle times of motor vehicles engaged in freight operations. We intend to expand this practice even further, since the Basic Directions for the Economic and Social Expansion of the USSR indicate the need to increase centralized hauls and to make extensive use of motor-vehicle trains with sets of trailers and semi-trailers. There will be an expansion of inter-city freight hauls in accordance with schedules and rational routings.

Beginning in 1979, the operational planning of inter-city freight hauls has been carried out with the help of computers, as a result of which the number of planned, rational routings grew during a year's time by a factor of 1.9. Additional work will be conducted on developing containerized and package-type hauls of freight with full mechanization of loading and unloading operations; there has been an expansion in the sphere of utilizing motor vehicles equipped with freight-hoisting tailgates and roller-bearing gangways for hauling packaged goods to the trade network. During 1980 the volumes of hauling freight in containers and packages increased by 40 percent, as compared with 1979.

The brigade-contract method of drivers' work is becoming more and more widely disseminated at automotive transport enterprises. In freight automotive transport alone now more than 230 brigades are working by this progressive method; they include more than 2,700 drivers. Some 60 percent of these brigades are working in accordance with the group-piecework method of labor payment.

The greatest successes in carrying out production plans have been achieved by the following: the drivers' brigade of the Kaunas ATP-6, headed up by brigade-leader I. Zubretskas, the brigade of the Pokruoy ATP, headed up by A. Shidlauskas, brigades of the Shyaulyay ATP-1, headed up by Yu. Kirshinas and V. Mezhis, and many other groups.

But it must be stated that in the matter of increasing the effectiveness of using automotive transport, in operating trucks, there are still quite a few shortcomings. Many motor vehicles are idle because of technical defects or lack of drivers. The transition to repairing rolling stock without the participation of the drivers is being carried out too slowly; far from everywhere is the economical expenditure of motor-vehicle fue; and other material resources being ensured. During the course of the year a number of automotive enterprises have not successfully coped with the assigned tasks regarding hauls; the existing rolling stock is not being utilized effectively enough, and a great deal of breakdowns are allowed.

The most important task for the groups at automotive-transport enterprises is to fulfill the products-list plan, i. e., the plan for hauls to every agreed-upon customer. Since 1980 there has been a considerable expansion in the group of principal customers, based, for the most part, on general-purpose automotive transport. This has required from the automotive enterprises a serious restructuring of the work of the operational services, as well as radical improvement in the operational accounts of hauls as a whole and for each customer in particular. In connection with this, we anticipated the adoption of appropriate measures by other ministries and departments--transport's customers. Unfortunately, not all the customers have so far exhibited the necessarily serious attitude toward this matter.

Certain ministries and departments have still not rooted out the practice of submitting knowingly overstated requisition orders for hauls by general-purpose automotive transport. The acceptance of such requisition orders and the approval, on their basis, of unrealistically high limits on hauls places the groups at automotive-transport enterprises and other customers in a difficult position. We must put an end to the bad practice of planning not on the basis of volumes of hauls but rather on the basis of number of motor vehicles. This practice is now being dragged along in all manner of ways by transport's other customers. The goal which is being pursued here is obvious: to absolve themselves of the responsibility for the required utilization of automotive transport, having as the principal reason for not fulfilling the volume of hauls the deficiency in delivering motor vehicles as compared with the requisition orders.

To a considerable extent, the effectiveness of automotive hauls is also reduced because of the fact that most of the freight consignees cease loading operations very early; they are not concerned with the loading docks and their mechanization.

All this leads to extensive, above-norm idle times of rolling stock. In 1980 these idle times amounted to 169,500 vehicle-hours. A particularly large number of idle times is permitted at enterprises and in organizations of the Ministry of the Food

Industry, the Ministry of the Building Materials Industry, the Ministry of Construction, at railroad stations, etc.

Above-norm idle times in automotive transport cause a great deal of harm to the state. In order that the struggle against idle times provide tangible results, serious work is needed with regard to a multi-faceted study of the causes of these idle times, as well as a large amount of organizational work on the part of freight shippers as well as freight consignees.

The question of improving freight hauls by general-purpose automotive transport in 1979 was discussed at a session of the Bureau of the CP of Lithuania CC. The ministry's work was subjected to serious criticism. At the same time it was noted that a number of our customers--ministries and departments--are making unsatisfactory use of automotive transport and permitting large, above-norm idle times in loading and unloading. The CC Bureau outlined an extensive program for eliminating the existing shortcomings in the work of freight automotive transport. Based on the directives of the CP of Lithuania CC, the ministry worked out a detailed plan of organizational and technical measures. Its fulfillment is yielding positive results.

Passenger-type automotive transport is attaining widespread development within the republic. Almost 4,000 buses and 2,000 taxis are engaged in serving the republic's population, including tourist-excursion trips, which are becoming more and more popular every year.

The total length of republic bus lines exceeds 124,000 km; moreover, just within the 10th Five-Year Plan 349 new urban, suburban, and inter-city bus routes were opened, extending 27,000 km in length.

The principal attention of the workers in passenger-type automotive transport has been concentrated on problems connected with the need to improve travel conditions on the routes, more effective use of transport means, improving the quality of operations and standards of service to passengers at all stages of passenger automotive transport with new equipment, advanced technology, and progressive organization of the work of drivers and conductors.

All this work is yielding positive results. During the period of the 10th Five-Year Plan there was considerable improvement in the automotive transport servicing of the republic's population. Particular successes in this matter were achieved by the groups of the Vilnius bus and taxi pools. In the socialist competition among the passenger automotive transport workers of the capitals of all the fraternal republics and the country's major cities in 1979 they were awarded first place for the high standards of service to passengers.

But there are still quite a few shortcomings in the work regarding serving passengers; fundamental among these is the comparatively high number of uncompleted trips. On the whole, the number of interrupted trips exceeds 4 percent of the total number of those planned. We cannot rightfully reconcile ourselves with such a state of affairs, and we will persistently strive to bring it about that the requirement stated in the Summary Report of the CPSU CC to the 26th Congress "...to improve passenger hauls--to reduce to a minimum violations of the schedule," becomes an inflexible rule.

Nor can we reconcile ourselves with any kind of malpractices allowed by individual drivers or conductors, with existing facts of coarse behavior, etc. We are waging a very determined struggle against all this; evidently, we must wage it more consistently.

Many auto-parks and rest areas have been built along the road routes for the convenience of passengers and drivers. But this does not satisfy present-day requirements. It is high time that we had motels, camping facilities, auto-service-points for passengers and auto tourists. In order for all this to be implemented, we need the cooperative use of funds.

The CPSU CC and the USSR Council of Ministers are constantly pointing out the necessity everywhere to ensure a system of the strictest economy with regard to fuel and energy resources, to achieve the elimination of losses from the irrational use of fuel, heat, and electric power.

Automotive transport is a major consumer of petroleum products. Outlays for fuel and lubricating oils here comprise as much as 30 percent of the expenditures for freight hauls and up to 20 percent of expenditures for passenger hauls.

The ministry is working on problems of economizing on petroleum products; this is facilitated, to a considerable degree, by the widespread use of trailers, improving the utilization of the runs and freight-hauling capacities of motor vehicles, organizing socialist competition among drivers, as well as groups at automotive enterprises for effecting savings on fuel and lubricating materials, and a number of other measures. As a result of these measures during the course of 1980 our drivers saved 6,800 tons of gasoline and 5,300 tons of diesel fuel.

During the years of the five-year plan the proportional outlay of automotive fuel per unit of transport operation--the ton-kilometer--was curtailed for gasoline-powered motor vehicles by 8 percent and for diesel-powered motor vehicles by 14 percent, which exceeds the amount of savings established for the five-year plan. Nevertheless, the ministry is constantly experiencing a shortage of motor-vehicle fuel. This is explained by the fact that many ministries and departments, associations, and Union-type enterprises are irrational in planning freight hauls by general-purpose automotive transport, not caring about what fuel resources are consumed by such hauls.

In particular, we consider utterly unjustified such specialization of plants producing reinforced-concrete items, under which hauls of their output are carried out by automotive transport from Vilnius and Kaunas to the Klaipeda zone, over a distance of as much as 300 km. Elements of large-panel housing construction are hauled over long distances. After the specialization of metal centers an analogous situation was created with the haulage of metals. And, is it indeed normal that a number of associations and enterprises, such as, for example, Litbytkhim, the Plunge Synthetic Leather Plant, the El'fa and Elektra Plants, the Kaunas Fastener Plant, the Mazheys Compressor Plant, and several others, plant the shipment of their own products by automotive transport over distances of as much as 1,500 to 2,000 kilometers? It seems to us that such an unsuitable practice ought to be carefully reviewed. And the sooner, the better.

Recently there has been an increased need to solve the problem of expanding the areas of AZS's /auto repair stations/, since the dimensions of the rolling stock are increasing from year to year. At present the areas of some AZS's have room for only a couple of long trailer trucks or vans, while the remaining vehicles have to get in line, often extending out into the traveled portion of the road.

As is known, our automotive-transport enterprises are experiencing great difficulties because of unsatisfactory supplies of spare parts for motor vehicles. Correct actions have, therefore, been demonstrated by those automotive-enterprise managers who, by drawing extensively on the help of their workers' wits and inventive thought, have organized in their own enterprises the repair and restoration of worn parts and assemblies, and, at times, even their manufacture.

The auto-repair plants are rendering a great deal of aid to the automotive enterprises in supplying them with certain spare parts, rubber-technical items, and restored assemblies.

During the past five-year plan all the auto-repair enterprises regularly fulfilled their plan indicators regarding the basic products list, gross and implemented output. A great deal of work is being conducted on the manufacture of specialized rolling stock, equipment, and supplies for automotive-transport enterprises. The groups at auto-repair enterprises, trade-union and Komsomol organizations are persistently improving the organizational forms of socialist competition, concerning themselves with increasing production efficiency, speeding up technical progress, the growth of labor productivity, introducing new and better use of existing production capacities. In 1980, 358 measures regarding new equipment were put into production, which yielded 189,600 rubles in savings.

Recently a series of competitions have been held at auto-repair enterprises; they significantly increased the activities of the workers, engineers, and technicians in the matter of improving the quality of repairs on motor vehicles, their units, and road equipment, as well as the manufacture of new products and spare parts. Every year there has been an increase in the number of workers to whom a personal stamp has been entrusted. If at the beginning of the 10th Five-Year Plan there were 103 such persons, now there are more than 500 of them.

The distribution of group (brigade) wages, utilizing the coefficient of labor participation, as practiced at auto-repair enterprises, has proved itself worthy. One of the first to introduce this experiment was the Vilnius ARZ. At the present time the plant distributes its group wages to 13 brigades, where 180 persons are employed. One of the best is the brigade of fitter-punch-operators in the machine shop, headed up by brigade-leader M. Leshchikov.

An automated system of production control has been successfully introduced at the Vilnius ARZ, and this allows us, with the aid of computers, to solve a number of problems regarding output quality, as well as mechanizing planning and accounting.

For its successful fulfillment of the plan for economic and social development in 1979 the Vilnius ARZ was awarded the Challenge Red Banner of the CPSU CC, the USSR Council of Ministers, AUCCTU, and the Komsomol CC.

Groups at auto-repair enterprises must devote greater attention to improving the quality of capital repairs on motor vehicles and their units, as well as ensuring the fulfillment of the plans with respect to the products list.

Practical experience requires that we expand the major repairs of individual units, curtailing herein the complete overhaul of motor vehicles. It is irrational to expend labor on overhauling a motor vehicle when some of its assemblies do not need to be repaired

The automotive-transport enterprise groups are conducting a great deal of work on combatting breakdowns. With the introduction of the monthly "Traffic Safety Day" there has been more planning and targeting in carrying out preventive work to avert motor-vehicle accidents on our roads. An important role is being played by the commissions of public control over traffic safety at automotive enterprises.

The positive results of this work are at hand. For the ministry as a whole the number of road-transport accidents where the drivers were at fault decreased by 17.7 percent in 1980 as compared with 1979.

We must strive even more persistently to strengthen labor and transport discipline, work on increasing drivers' knowledge and skills, improve the technical condition of motor vehicles coming off the assembly line, and, in short, establish firm protection against breakdowns.

Whatever segment of operations we may look at, we can see everywhere large reserves for the successful fulfillment and over-fulfillment of the tasks assigned by the plan. The task of this republic's automotive transport workers is to apply all their efforts and all their skills in utilizing them.

More than 42,000 persons are employed in automotive transport enterprises. Among them the majority fulfilled the tasks assigned by the 10th Five-Year Plan ahead of schedule. Some 1080 winners of socialist competition were awarded the unique All-Union badge, entitled "Shockworker of the 10th Five-Year Plan."

Among the groups in this ministry's enterprises widespread dissemination has been gained by the initiative of progressive workers to work without anyone lagging behind. Many enterprise groups, columns, workshops, sections, and brigades compete under the slogan, "Keep up together without a single laggard."

Competition is expanding among drivers to lengthen the service-life of their motor vehicles and increase their runs without major repairs.

A high degree of effectiveness has been attained by the labor competitions of the Party organizations of the Shyaulyay ATP-1, the Panevezhius ATP-2 and bus pool, the Moletc, Pavenchyay, Shiluta, and Yurbarka ATP's.

As indicated in the materials of the 26th CPSU Congress, one of the basic factors of increasing production and the growth of labor productivity is scientific and technical progress. In order to speed it up and intensify its influence on the operational indicators of automotive transport--growth in the volume of hauls, freight turnover, passenger turnover, and profits--the primary attention of this sector's workers during the 11th Five-Year Plan must be concentrated on the following trends:

--further improving the organization of the transport process, intensifying the operation of the motor-vehicle pool, and, on this basis, ensuring the full satisfaction of the needs of the national economy and the population for hauls;

--ensuring further improvements in planning automotive-transport operations;

--stepping up the introduction of new equipment, progressive technology, and automated control systems;

--improving the quality of rolling-stock technical maintenance;

--increasing traffic safety and guaranteeing a decrease in the harmful effect of transport on the environment.

Large problems are being solved by Lithuania's automotive-transport workers in 1981--the first year of the 11th Five-Year Plan. A 6.3-percent growth is planned for general-purpose automotive transport's freight turnover. Passenger hauls are being expanded--the general-purpose bus-passenger turnover will be increased by 1.2 percent, while taxi-passengers hauls will be increased by 6.5 percent.

Further development has been provided for the development of general-purpose automotive transport's material and technical base. In 1981 construction work will be completed on an automotive-transport enterprise in Kapsukas, a bus station in Ignalin, while a number of measures will be implemented with regard to the technical re-tooling if existing automotive-transport enterprises.

Experience accumulated in organizing the effective utilization of automotive transport and extensively developed socialist competition have provided the ministry with an opportunity to successfully carry out the tasks assigned by the 26th CPSU Congress and the 18th Congress of the CP of Lithuania.

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Maintenance Facilities

Moscow TRUD in Russian 13 May 81 p 4

/Article by S. Snegirev, TRUD special correspondent: "Service Facilities for Motor Vehicles in Lithuania"; passages enclosed in slantlines printed in boldface/

/Text/ /How You Are Being Served/

/In his Summary Report to the 26th Party Congress General Secretary of the CPSU CC, Comrade L. I. Brezhnev spoke about the need for further improving the service sphere. Today we are talking about how these problems are being solved within the Avtoservis system of the Lithuanian SSR, where an integrated network of technical services for motor vehicles has been created./

We had not worked out any particular route. We marked out a circle on a map of the republic's roads, attempting to encompass as many different populated points as possible, and we set out on our trip.

After making the acquaintance of the standard, 13-post technical-service station in the city Alitus, our road lay through the interior of the Kaunas region. Through the windows of the vehicle flowed the sights of wooded hills, fields, becoming deeper in color under the spring sun, and after several turns kolkhoz areas emerged more and more frequently. The kolkhozes here are solid; good-quality houses stand in these settlements. Almost every house has a garage. This republic now ranks among the top places in the country with regard to number of motor vehicles per thousand inhabitants. A considerable portion of the privately owned automotive transport here is accounted for by the rural population. Perhaps there was only one inconvenience which was experienced by auto owners until recent times: all problems connected with the technical condition of the vehicle had to be solved in the regional centers, where the technical-service stations were located. They were rather distant. Now the situation here has changed.

Not far from the village of Altonishkes we turned off the asphalt road and headed for some buildings which loomed in front of us.

"Quite recently there were kolkhoz workshops here," I was told by the general director of the republic-level production association Avtoservis, A. Ugyanskis. "Then the kolkhoz transferred them to another place. We bought up the place which had been vacated, carried out a modernization by our own efforts, and opened up a rural technical-service station here."

To be sure, only in its external appearance and modest size was this station different from the usual urban station. Here on their modest-size areas were located all the necessary sections: diagnostics, routine maintenance, and body repair. Each post was supplied with up-to-date equipment.

Dozens of such rural stations are scattered throughout the entire republic. Almost all of them are situated in areas of former kolkhoz workshops. Some of these areas were purchased by the Lithuanian SSR Ministry of Everyday Public Services, which includes Avtoservis, and some of them were leased.

The creation of a network for technical services to motor vehicles was completed by the rural stations.

"In the early 1970's the Kaunas Institute for Planning Urban Construction worked out a plan for distributing all everyday services, including Avtoservis, throughout Lithuania," stated A. Ugyanskis. "In accordance with this plan we also created our stations. There are now 33 of them in the republic. The basic enterprises are located in Vilnius, Kaunas, Panevezhius, Klaipeda, and Shyaulyay. Others are situated in regional centers and in rural localities. Moreover, at 16 everyday-service combines we have opened up special points for providing technical services to motor vehicles. In addition to this, there are nine AvtoVAZ /Volga Automotive Plant/ technical-service stations in our republic. And so we have now brought our services close enough to satisfy the auto owners."

/But Avtoservis has not limited itself to merely creating an integrated network of technical services to motor vehicles. Not so long ago the first five-story cooperative garage appeared on one of the streets of Vilnius. And right away the management of Avtoservis proposed to open their own point within it. They attached two experienced fitters to the garage, equipped two units, and now the local auto owners do not have to go to a station for every minor repair. Avtoservis equips washing facilities on open parking spaces during the summertime. At present they are thinking about opening up points on such parking spaces for minor repairs on motor vehicles./

I managed to visit many of Avtoservis's stations, and modernization was proceeding at almost every one of them--body-repair sections were being expanded, while diagnostic and washing posts were being taken out of the basic workshops. In due course the specialists of Avtoservis have provided for an increase in the volume of body work (remedying the effects of age and accidents on motor vehicles) and have adopted timely measures to expand this production. By the way, in Vilnius one out of every three functioning Avtoservis stations performs only body work.

...Among the diversely colored Zhigulis and Moskviches the gray, cube-shaped, metal container seemed like an alien body. But it is precisely this container which, in the opinion of the Avtoservis management, will allow a considerable reduction in the time periods required for body work, along with an improvement in its quality. The fact of the matter is that up to now all the "interior" components of a motor vehicle have been stored haphazardly: in racks or in cupboards. This made the assembly of a vehicle after painting considerably more complicated; and even losses were not exceptional under such a system of storage. Now at the station it has been decided to create a container-type assembly line. Everything which is removed from a motor vehicle for the repair period is packed away in a container, after being registered under the eyes of the customer. At the assembly, upon the completion of the repairs, the container will move along the line together with the motor vehicle. Under this system there will be a significant reduction in the time period required for assembly operations, and their quality will be improved. The first such line is scheduled to be put into operation in May.

A great deal could be said about innovations in the Lithuanian Avtoservis system, but...

"In 1974 we were the first in the country to build a republic-level spare-parts center within the Avtoservis system," stated A. Ugyanskis. "At a branch of NAMI /Scientific Research Automotive Institute/ we worked out a system of supplying the center and enterprises with spare parts in accordance with the "minimum--maximum" principle. By this principle it has been determined what are the maximum and minimum amounts of a given part which should be at the center and, accordingly, at the enterprises. Upon attaining the "minimum," the manufacturing plant is supposed to send on the complete set of parts. But in practice it has turned out to be more complicated. Many manufacturing plants have failed to meet their deadlines and violated their agreements to supply us with spare parts. Thus, for example, just last year our requisition orders were not filled for bearings and rings for the Zaporozhets motor vehicles, nor for cylinders, seals, and a number of other parts for the Moskviches. We are receiving only 1/5 or 1/10 the spare parts required for the Zhigulis."

To be sure, they are striving to find a solution to this situation also at the Lithuanian Avtoservis. Here, for example, they have concluded an agreement with local enterprises to manufacture mufflers and parts of the exhaust system. Upon the association's initiative, several of the republic's plants have proceeded to manufacture baffle plates for Moskviches, Zhigulis, and Volgas. At many technical-service stations they have organized the restoration of such spare parts in short supply as ball bearings for Zhigulis, as well as valve-drive levers, rear and front doors.

The striving by the workers of the Lithuanian Avtoservis to create a maximum of conveniences for auto owners has also been reflected in the mail being sent to the association. For the most part, letters arrive here with words of gratitude. But they too end up, as a rule, in the same way--with a question about spare parts. It is a question which the Avtoservis management has addressed, on several occasions and so far, unfortunately, in vain, to the enterprises of the USSR Ministry of the Automotive Industry and many others. On its resolution, in the final analysis, depends not only the success of the good beginnings of the Lithuanian Avtoservis. The experiment being conducted by the republic's association undoubtedly merits the widest possible dissemination. But to emulate it will probably not be easy. Because almost all efforts within the enterprises of the entire country's Avtoservis system are still being devoted to only a single problem--the quest for spare parts.

2384
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MOTOR VEHICLE

UDC 621.436.002

WORK OF YAROSLAVL' ENGINE PLANT

Moscow AVTOMOBIL'NAYA PROMYSHLENNOST' in Russian No 5, 1981 pp 3-4

[Article by A.M. Dobrynin, Yaroslavl' Engine Plant: "Basic Tasks of Yaroslavl' Engine Makers"]

[Text] The decisions of the 26th CPSU Congress define the tasks and main directions of development of the motor-vehicle industry, including, naturally, the collectives of engine-making enterprises for the 11th Five-Year Plan and for the period to 1990. The chief one of them is to attain a radical improvement of technical-economic indicators and quality of production. For engine makers, this means the creation of new, improved, reliable and durable high-power engines with reduced expenditures of fuel and oil, with slight emission of toxic gases and with good operational and maintenance characteristics.

The collective of Yaroslavl' Engine Plant--the head enterprise of Avtodizel' Production Association--greeted the decisions of the party congress with tremendous enthusiasm. It became the initiator of the further expansion and deepening of the movement for increasing the capacity of engines and the utilization for this purpose all of the advantages of the previously created comprehensive system of quality control of production (CSQCP). This system provides for the creation of the initial design of engines, a perfected technology for their production, arrangement of creative ties with motor enterprises and repair bases, study and analysis of data obtained from users, development of methods of accelerated tests of power units for verifying the effectiveness of the planned measures, work with related enterprises for providing high reliability and long life of supplied constituent items and quality of materials, phased improvement of engine capacity and improvement of design of engines while taking into consideration the technical and economic advantageousness of the projected measures.

Realization of the measures in accordance with the CSQCP in the years of the past five-year plan ensured improved rigidity and reliability of the engine block by means of the side coupling bolts; greater fatigue resistance of crankshafts through thermal treatment and knurling of chamfers, increased neck diameters, introduction of thin-walled bushings and nitriding of shafts for high-load engines; improvement in the system of air cleaning through the introduction of air filters of the dry type with paper filtering elements; increased reliability of gas-distribution system. In addition, a series of measures was developed and introduced that significantly reduced labor intensiveness in the servicing of the manufactured engines the need for spare parts for them. For example, only one such measure--anticavitation protection of the cylinder sleeve and block--made it possible to reduce the number of blocks set aside for spare parts by almost 25 percent.

Increased creative activity of the plant's workers has been promoted and continues to be presently promoted by an agreement on technical cooperation between the associations BelavtoMAZ, Avtodizel', Autotransport Combine No 1 of Glavmosavtotrans. This agreement has been in effect for 9 years (since 1972). Its participants, while developing and improving the forms of creative cooperation and socialist competition, have achieved a great deal in engine improvements: outlays were significantly reduced for the maintenance and repair of motor vehicles and power units, downtime of motor vehicles, and their use efficiency has been boosted; the capacity of base engine models has been increased from 6,000 to 10,000 hours, while the operation of motor vehicles without capital repairs has gone up from 180,000 to 250,000 km. Special attention has been devoted to improving the reliability and durability of engines for quarry motor-vehicle dump trucks, thanks to which their life was increased 1.5-fold.

The economic gain for the national economy from the increased capacity of YaMZ diesels due to reduced capital repairs, outlays for maintenance and spare parts during the 10th Five-Year Plan amounted to 1.15 billion rubles and, since the beginning of the work--about 2.0 billion rubles.

The collective of Avtodizel' Production Association has been devoting and continues to devote a great deal of attention to questions relating to the operation and repair of YaMZ diesels. On the basis of comprehensive studies conducted jointly with scientific-research institutes, organizations of the State Committee for Sel'khoztekhnika and repair plants have worked up design and technological documentation on industrial repair of these diesels in which industrial methods of restorative repair of base diesels are used.[1] Interdepartmental tests of diesels repaired with this technology confirm that their capacity is no less than 80 percent of the capacity of new engines.

The use of industrial methods of restorative repairs yields significant economic results. For example, just the repair of the crankshaft, connecting rods and piston pins of a 12-cylinder diesel results in an economy of more than 5.0 million rubles a year and more than 2,000 tons of rolled steel (through a corresponding reduction of the production of these parts for repair).

The design and technological documentation developed by the plant for repair of engines and restoration of its parts has been turned over to 62 of the country's repair enterprises. At many of them, work has already been started on the restorative repair of the main parts of engines.

A new stage in the organization of industrial repair of engines is marked by the construction of an experimental repair plant at Avtodizel' Production Association--a plant which will serve here as a powerful research and experimental base for work on the further improvement of repair methods and equipment.

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1. See AVTOMOBIL'NAYA PROMYSHLENNOST', Nos 1, 2 and 3, 1981.

The engineering-technical services of Avtodizel' Association have also developed a complex of organizational-technical measures providing for improved operation of diesels, lower levels of smoke and toxicity through modernization of the fuel apparatus and design of the actual diesels. Among such measures, mention should be made of the creation of higher-power diesels with a turbo-supercharger (YaMZ-238P with a power of 206 kw, YaMZ-238F with a power of 225 kw and YamZ-240P with a power of 309 kw) for motor vehicles produced by the production associations BelavtoMAZ and AvtoKrAZ. These engines, compared with the basic models, have 18 percent more power, a specific mass that is 6 percent smaller, noise that is 2-3 decibels lower. Thanks to these engines, the productivity of the corresponding MAZ and KrAZ models was increased due to greater load capacity and average rate of speed by 10-24 percent and fuel consumption at identical speeds of movement was reduced 10-14 percent. National-economic gains from the introduction of the new engines according to preliminary estimates will amount to hundreds of millions of rubles.

The engine makers of Avtodizel' Production Association are cooperating creatively with enterprises fabricating component items and materials, for example, with the collective of Yaroslavl' Plant for Fuel Equipment and with enterprises manufacturing itmes from rubber, asbestos and the like.

We support permanent creative ties with scientific-research institutes of the rubber industry, asbestos products of the petroleum industry and other scientific institutions.

Work jointly performed made it possible to significantly increase the service life of rubber reinforced collars, belts, sealing rings and to introduce new grades of engine oils. But by no means has everything been done; at the present time work is continuing on improving the quality of lining material, engine and transmission oils and stabilization of the quality of fuel pumps and injectors.

Guided by the directives of the party on the necessity of developing the production of highway tractor-trailer trains, quarry dump trucks with very high load capacities and Kirovets tractors, the association's collective created the design and is no engaged in preparing for the production of the new family of diesels with power of 213-478 kw. These engines incorporate the leading achievements of Soviet science and domestic and foreign engine construction, assuring modern technical-economic indicators, including high engine capacity and fuel economy, a low level of smoke from exhaust gases and of labor intensiveness of maintenance. There have been developed for them, in particular, turbocompressors, intercycle air coolers, high-pressure fuel equipment, an improved system of cleaning air, oil and fuel. State tests of two of the new diesels (the 12-cylinder with a supercharger installed on the BelAZ motor vehicle-dump truck with a load capacity of 40 tons and an 8-cylinder one installed on the highway MAZ truck-trailer train with a total mass of 48 tons) showed that the productivity of motor vehicles with these engines has increased by an average of 24 percent and fuel consumption has been reduced 13-20 percent.

The appearance of the new 12-cylinder engine is shown in the figure and its technical characteristics are presented below.

Number of cylinders, each	12
Cylinder diameter, mm	140
Piston stroke, mm	140
Engine displacement, cm^3	2,586
Frequency of rotation of crankshaft, min^{-1}	2,200
Mean effective pressure under nominal power, MPa	1.03
Mean piston velocity, m/s	
Maximal torque, N·m	2,250
Frequency of rotation of crankshaft when M_{max} min^{-1}	1,400-1,600
Mass of nonprimed [nezapravlennyy] engine, kg	1,870

The engine makers of Avtodizel' Production Association launched on a broad scale in the first months of the first year of the new five-year plan socialist competition for higher quality of their work, ahead-of-schedule fulfillment of plan targets. They are applying all their knowledge, abilities and experience to the successful solution of the tasks set by the 26th CPSU Congress.

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7697
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MOTOR VEHICLE

USE OF ROBOTS, MANIPULATORS AT MOTOR-VEHICLE PLANTS

Moscow AVTOMOBIL'NAYA PROMYSHLENNOST' in Russian No 7, 1981 pp 30-31

[Article by A.N. Saverina: "Robots and Manipulators"]

[Excerpt] The section for the cold-die casting of a spherical pin for the KrAZ motor vehicle was developed at the Scientific-Research Institute of Technology of the Automotive Industry and was established at Kremenchug Motor-Vehicle Plant imeni 50-Letiye Sovetskoy Ukrainy.

The section consists of a press, a bunker with an elevator and an automatic manipulator--Model 3388. The heaviest and most monotonous work is performed here with a two-armed manipulator: when the blanks for the spherical pins individually reach the die (via a special chute which simultaneously serves as a holding unit), each one of them is picked up by the right arm of the manipulator, which rotates them 90°, while the left arm removes at this time the finished forging from the die. Then the arms turn to the left, lower and unclasp. A blank is placed in the die, while the forging is dropped by means of a chute into a container; the arms of the manipulator are retracted and turned to the right. The cycle is then repeated.

The entire technological cycle of stamping at the section is completed without human participation. For control of the blanks on the chute and removal of finished parts from the die, noncontact end switches are provided on the feeding and removing chutes. The system of control of the manipulator makes it possible to synchronize the operation of the entire section. Press productivity is 500 forgings per hour.

The Model A711A07 automated installation was developed by the special design bureau of precision casting machines at the Tiraspol' Casting Machine Plant imeni S.M. Kirov and is intended for fabrication of castings from nonferrous alloys in series and mass production.

The machine performs (semiautomatically) the following operations: cleaning and lubricating of the mold, closing and locking of the mold, pouring of metal into the pressing chamber with the aid of the manipulator, pressing, allowing time for crystallization of the pressed metal, opening of the mold, ejection and dropping of casting, retraction of press plunger to original position.

The installation consists of Model A711A07 machine for pressure casting with a locking force of 1,600 kilonewtons for the mold, a manipulator for pouring metal with a nominal dose of 1.25 kg and a device for lubricating the press molds.

The manipulator pours the melted metal with a measuring ladle into a pressing cup. The pressing mechanism transfers the poured metal into the mold and then with great force, created through multiplication, completes pressing it.

Crystallization time is controlled automatically with the assistance of a time relay. A hydraulic ejector secures the ejection of the casting and its dropping with pushers. Lubrication of the press mold is done with a special device, which also provides for its cleaning.

For reasons of work safety, the machine is provided with safety devices that prevent improper turning on of the mechanisms. Button control of the machine, a semiautomatic operation of metal pouring, dropping of the casting, cleaning and lubrication of the press mold and also rational location of control organs and chief servicing locations make it possible to boost the operator's labor productivity.

Technical Characteristics of the Machine

Movement of movable plate, mm	380
Distance between columns horizontally and vertically inside, mm	450
Thickness of mold, mm	
minimum	220
maximum	500
Maximum pressing force, kilonewtons	200
Number of pouring positions	2
Shifting of pouring positions downward, mm	100
Time of one double movement of movable plate (without installed mold), sec	>4.3
Number of cycles per hour with continuous operation of machine (without pouring of melt)	<200
Diameter of filling cups, mm:	
minimum	36
maximum	80
Smallest sectional area of mold in vertical plane, mm^2	320 X 320
Pressing pressure, N/cm^2:	
minimum	4,000
maximum	19,700
Emergence of pressing plunger beyond plate surface, mm	110
Force of ejection of casting, kilonewtons	117
Consumption of water for cooling purposes at a temperature of up to 288 k (15°C), l/hr	2,000
Overall dimensions, mm	5,490 X 2,080 X X 1,700
Mass, kg	8,940

For mechanization of loading-unloading operations at assembly, machine, heat-treatment and other shops as well as for moving of individual loads, free-flowing or liquid materials in a container, a universal manipulator with a load capacity of 150 kg, developed by Elektronika Central Scientific-Research Institute was assigned. It can also be used for the installation of parts on machine tools, the loading and unloading of electric trucks and carts, interoperation movement of loads.

Technical Characteristics of Manipulator

Magnitude of vertical movement of load, mm	1,700
Radius of attended zone, mm:	
maximum	2,200
minimum	900
Angle of turn of indicator, grad	300
Rate of vertical movements, m/min:	
first	5
second	10

A hook based on GOST 6627-66 is used as a hooking device in the manipulator, but a catching device with pneumatic or vacuum drive may be employed instead.

The annual economic gain from the introduction of one manipulator amounts to 2,000 rubles.

The Universal 15.01 Industrial Robot intended for automation of loading-unloading work in the serving of basic technological and auxiliary equipment as well as for interoperation and intertool transporting under conditions of mass large series and series production operations.

Technical Characteristics of Robot

Load capability, kg	16
Number of degrees of mobility	6
Accuracy of positioning	±2
Number of controlled coordinates	6
Number of programmed points:	
in space of transporting coordinates	16
for orienting coordinates	6
Number of technological commands	12
Type of drive	Electrohydraulic
Overall dimensions, mm:	
of manipulator	1,260 X 1,440 X 1,600
of control system	650 X 530 X 1,240
Mass, kg:	
of manipulator	2,300
of control system	100

The Universal 15.01 Industrial Robot replaces essential and auxiliary workers in heavy, dangerous and monotonous work.

The Scientific-Research Institute of Technology of the Motor-Vehicle Industry developed a model section of sheet-metal stamping of small parts; the equipment consists of a press with a force of 400 kN with a model MP-9S automatic manipulator and a model USB-01.03 vibrating bunker.

The work of the section is performed in the following manner. Blanks from the vibrating bunker (manufacturer--Panevezhis Autocompressor Plant) are put out individually on a chute on which they reach they reach the initial position for loading into the die. Loading of the die is done with an automatic manipulator (manufacturer--Volga Motor-Vehicle Plant imeni 50-Letiye SSSR). By means of a gripping device of the manipulator, the blank is put in the position of the die, simultaneously pushing the finished part on the chute along which it slides into a container.

The entire technological stamping cycle is completed without human participation.

Noncontact end switches are provided for ensuring safety of stamping for control of the presence of the blank on the chute and removal of the finished part from the stamping space on the supplying and removing chutes.

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BRIEFS

BUS ROUTES ALONG AFGHAN BORDER--For the first time on the Pamirs the UAZ 452 microbus-taxi is running on the mountain roads of the Darvaz Valley. Rapid vehicle transportation with good cross-country capability links the regional center with remote villages in the eastern part of the valley. Regular bus service is already established on the Kalaikhum-Kurgovad village route and also includes other villages. The roomy, maneuverable buses are well suited to the conditions of the mountainous kray. An increase of the fleet of UAZ's is planned to replace the usual Volgas, which have been ineffective. [Text] [Dushanbe KOMMUNIST TADZHIKISTANA in Russian 10 Sep 81 p 4]

CSO: 1800/871

RAILROAD

PAVLOVSKIY DISCUSSES RAILROAD DEVELOPMENT, PLANS

Moscow IZVESTIYA in Russian 25 Aug 81 p 2

[Article by I. Pavlovskiy, USSR minister of transportation: "The Potentials of the Steel Highway"]

[Text] The need for an overall solution to problems associated with the development of transport was particularly emphasized at the 26th CPSU Congress. The railroads occupy a leading place in satisfying the transport requirements of the national economy. Their decisive significance in a unified transport system is widely known.

The normal, prescribed rhythm of the railroads as the main transportation carrier is determined, in essence, by the uninterrupted operation of each of its links. This rhythm depends on the handling capacity of the stations and junctions, on the carrying capacity of the sectors, on the industry enterprises' level of technical equipment and, without doubt, on the precise functioning of the transport shops of cargo shippers and consignees. A breakdown in any of the links in a continually operating transportation carrier shows up in the work of entire routes; it upsets the planned railcar flow among the regions of the country, and it requires lengthy shunting using the switching resources on a nationwide scale.

Figures characterizing the extent of the intensity of operation of Soviet railroads have been presented in the press more than once. The average freight traffic density of our railroads exceeds a similar index achieved abroad by a factor of many times. Today a number of the most important routes in the rail network are already operating with a very great burden on the basic technical equipment. At the same time, and this is natural, the interest of a continually developing national economy require that rail transport incorporate an increased freight and passenger turnover during the 11th Five-Year Plan. To a considerable extent, we are tying the successful resolution of the problems posed to the use of production potentials.

Today within the industry, the main emphasis is being placed on the supplemental yield of the final product of transport--transportation--from each kilometer of rail lines, on the acceleration of the growth of labor productivity and the better employment of equipment, fuel and power and material resources. This corresponds fully to the directive of comrade L. I. Brezhnev: "Intensification of economy... if one is to transfer this formula to the language of practical matters, consists primarily of a state in which the results of production grew more rapidly than their costs, so that, drawing relatively fewer resources into production, it may be possible to achieve more."

Further intensification of the operation of the steel lines requires a more precise observance of traffic schedules, improvement in the employment and acceleration of operations to increase the passenger and freight capacities of the most important routes of the network, and in improving the operational reliability of locomotives, cars, track and other technical transport equipment. I would like to dwell in particular on the use of freight capacity reserves by increasing the length and weight of trains. I will make reference to the example of the Muscovites. Not too long ago, a number of the approaches to the Moscow rail junction worked very intensively during maximum transport periods. According to the predictions of specialists, a further growth in freight traffic volumes was anticipated on these routes. The capital's railroad workers found an effective solution under the conditions which were created; they increased the length and weight of the trains.

Engineering and technical workers and production pacesetters of the Moscow line, in collaboration with transport scientists, developed and incorporated a new technology for marshalling and pulling freight trains of above-norm weight. The experience of the best "heavyweight" engineers, thorough engineering calculations and new principles for organization of non-stop train movement over sectors and entire routes between the stations of origin for the above-norm trains and their break-up stations are the basis of this technology. Having brought the weight of the freight train to 6,000 tons at first, and then, since March of last year, up to 10,000 tons on one sector, the Rybnoye-Perovo sector, the capitol's railroad workers increased the freight capacity of the mainline noticeably. More than 160 million tons of national economy freight have been transported on above-norm freight trains during the past two years.

Due to the formation of the giant trains, a definite reserve in carrying capacities has been created which has permitted us to increase the train traffic speed and to realize the power of the locomotives more completely. A savings in operating resources has been achieved by reducing the number of locomotives and locomotive crews.

As is known, this trend-setting experience has been approved by the CPSU Central Committee and recommended for broad dissemination. The ministry has posed the following task for all railroads: to incorporate it within a minimal time period and to accelerate cargo delivery through the better use of the freight carrying capacity of the mainlines. The experience of the initiators of this progressive beginning attests to the fact that costs associated with organization of above-norm freight trains, without which it is impossible to get along in this instance, are repaid many times over by the savings to the national economy.

At the 26th party congress, serious attention was also devoted to the development of stations which are the chief limiting link in the organization of above-norm freight train traffic. Significant allocations and material resources have been set aside in recent years for the development of stations, particularly the lengthening of the station track. From 1976 to 1980, 2700 kilometers of station track were laid, a figure which includes the lengthening of existing track at 900 stations. New, large-scale sorting yards (Bekasovo, Berezniki, Razdel'naya, Shirvan and Nakhodka-Vostochnaya) have been built and put into operation. Continuing the accelerated development of stations has also been provided for in the new five-year plan. To be laid are 2400-2800 kilometers of station track, and station track will be lengthened at more than 1000 stations.

By the end of 1985, the sorting yards should provide a substantial increase in the effectiveness of the use of the rail car fleet due to the realization of a broad program of mechanization and automation of interstation processes, increasing the capacity of the track, further improvement in work technology and incorporation of advanced experience. In this regard, the collective of the Orekhovo-Zuyevo station, which achieved significant results in the use of new equipment and advanced technology, and which provided a high growth rate in labor productivity, set a good example. During the 11th Five-Year Plan, they took the initiative for further increasing the effectiveness of the use of transport means. These factors will create the conditions for satisfying the five-year plan quotas for accelerating car turnaround.

We are expecting to obtain more than 20 percent of the planned actual savings in car turnaround time due to reduction in idle time during loading operations. This is still another reserve in the intensification of rolling stock usage. The broad incorporation of the experience of the L'vov line and the enterprises and associations served by it is a powerful lever for reaching the indicated goals. This experience has also been approved by the Party Central Committee. IZVESTIYA has already reported on it in detail. I would like to emphasize in particular that the comprehensive system for effective car use which has been developed and incorporated at enterprises in L'vovskaya Oblast provides for equal responsibility for the use of cars under the plan among those who load and unload them and those who deliver them from the shipper to the addressee. It is for this reason that such important significance is imparted to the L'vov experience. Railroad workers and their partners, workers in the transport shops of enterprises and associations, are obligated to solve the problem rapidly, due to which the national economy should obtain additional loading resources for transportation of many tens of millions of tons of cargo, given the same rail car fleet.

Continuing the conversation about rail transport reserves which, as is known, performs a greater volume of work than rail transport in all the rest of the world, it is impossible not to see that much is also concealed behind a reduction in inefficient shipments. Correspondence appears periodically in the press concerning similar facts of uneconomical relationship to car usage. It follows from an analysis of the operational activity of the network and statistical accounting that no less than 10 percent of the railroad's freight turnaround may be considered to be inefficient shipments.

There are diagrams of normal routes for freight traffic flow which the railroad has been entrusted to monitor and there is the Interdepartmental Commission of Gosplan USSR which follows train traffic so that one and the same product is not transported thousands of kilometers in opposite directions. But all of these measures do not permit us to uproot inefficient shipments completely. A more efficient economic lever of action is probably necessary. We think that planning the transport costs in all sectors of the national economy may become such a lever.

A more efficient use of production potential of the industry (and, as is known, about 9 percent of all fixed capital of the national economy is concentrated in enterprises of rail transport) is an important route to mastering the growing volumes of shipments. In accordance with the decisions of the 26th party congress, a comprehensive long-term program for transport development is currently under development. For us, the growth of the passenger and freight carrying capacities of the railroads through the construction of new lines and the creation of vigorous sorting complexes and other sites designated for production will become one of the main divisions of the program. The plan for development of rail transport during the 11th Five-Year Plan is a component of this program.

It has been projected to open through train service over the entire length of the Baykal-Amur mainline during the current five-year plan. The significance of this construction project is well known. The BAM will serve as a main pivot for the creation of very large territorial-production complexes.

During the current year, construction of the Pogrommoye-Pugachevsk line is being completed. It will be an important component of a north-south mainline which will improve transport connections over the Ural-Povolzh'e [region along the Volga River] South part of the country route. The Kiev-Tripol'ye line under construction will ease the burden on the Kiev-Fastov sector and connect the capital of the Ukraine with the Donbass region, the area along the Dnepr River, the Cauasus and the Crimea by the shortest route. Other lines under construction will fulfill similar functions.

The party and government are devoting particular attention to electrification of the railroads. As is known, the largest network of electrified lines in the world is in the Soviet Union. It will consist of about 50,000 kilometers by the end of the current five-year plan and will provide about 60 percent of all of the freight turnaround for rail transport. Electrification produces an immense national economic effect. Together with an increase in the passenger and freight carrying capacity of the lines; it will permit a substantial savings in diesel fuel to be achieved. The realization of the plans outlined for the current five-year plan, as calculations show, will produce a savings of about 7 million tons of this scarce fuel.

Many complex problems are confronting railroad workers in the five-year plan which has just begun. Their successful resolution has tremendous significance for the further growth of the Soviet economy and for implementation of the far-reaching plans for communist construction. We are sure measures outlined for the five-year period for improving work and for overall development of the industry will make it possible to solve the main problem posed before the workers on the railroad by the 26th CPSU Congress: to satisfy the requirements of the national economy and the populace for transportation completely and in timely fashion.

9194
CSO: 1829/346

RAILROAD

ELECTRIFICATION OFFICIAL DISCUSSES PLANS, PROGRESS

Moscow GUDOK in Russian 6 Aug 81 p 2

[Article by P. Shilkin, chief of the Ministry of Railways' main administration for electrification and power resources: "Demands of the Times"]

[Text] Rail electrification is one of the primary directions of technical progress in transport. Our country has long been the leader in length of electrified lines and shipment volume on them. The total length is 44,000 km, and about 55 percent of all rail shipments are made on electrified lines.

In the new five-year plan, we are faced with transferring more than 6,000 km to electric traction. Electrified lines will then be able to assume up to 60 percent of the network's total shipping volume.

In order to carry out what has been planned successfully, we need to intensify our personnel training and develop the production base for manufacturing reinforced concrete and metal components. We also need to create and set up the release of highly efficient and reliable mechanisms. Unfortunately, uneven electrification planning in preceding years has had a negative effect on solving these problems. Very little practical work has been done in recent years to step up work tempos.

The situation on wiring trains of "Transelektromontazh" trust is alarming. Their technical level, equipment and staffing do not meet modern requirements. An order to strengthen the subdivisions of this trust was issued by the Ministry of Transport Construction last year, but the situation has still not improved, unfortunately. The production capacities of the wiring trains cannot ensure plan fulfillment, even on the condition that facilities are released for wiring evenly.

Experience in 1979 and last year in particular showed that an extremely difficult situation was created in the second half of the year due to inadequate attention to providing electrification projects with materials, machinery and mechanisms, and due also to the shortage of manpower on all electrified lines. In order to put sectors into operation, unbelievable efforts had to be made. And it was only thanks to the energetic assistance of railroad workers, especially in installation, start-up and adjustment jobs in the contact network, traction substations, STsB [signalization, centralization and block system] and communications, that the situation was saved and facilities put into operation.

Nonetheless, the allocations made were not fully utilized. A number of jobs on start-up complexes were not finished. More than eight million rubles remained unutilized at electrification facilities put into operation in 1980.

The start of normal operations was naturally delayed. The unfinished work is being eliminated very slowly, in spite of guarantees and assurances from the trusts and the leadership of the Ministry of Transport Construction, and much still remains undone. Thus, traction substation installation and adjustment has not been completed at Mynkul', Sara, Aksarikha, Boynovka and Skalino. Contact network dispatcher centers have not been put into operation at Kamyshlov, Kalitsa, Skalino and Gryazovets and the contact network is not yet in operation at Nikel' and Orsk stations or in a number of technical service buildings and housing units.

Let me add that serious difficulties arose in the initial operating period due to the large number of contact network and current collector failures. On the Druzhinino-Krasnoufimsk sector, more than 1,200 supports were installed in November and December. In the spring, when the ground thawed, more than 900 of them had to be straightened, the ground packed down and fill added. The same thing happened on the Orsk-Kuvandyk sector of the South Urals road.

This year, 1,075 km is to be switched to electric traction. The main sectors will be Bira-Arkhara (226 km), Orsk-Orenburg (228 km), Karaganda-Mointy (339 km) and Orsha-Borison (132 km). In the first half of the year, funds allocated for electrifying roads were utilized better than in 1980. Work tempos have increased month by month. For the first half of the year as a whole, 42.5 percent of the annual plan was carried out. Contact network supports are being supplied somewhat better and installing machinery has been added to start-up sectors.

Still, the situation cannot be considered good on a majority of the sectors. Last year's mistakes are being repeated. Target tasks set by joint measures are not being carried out. Manpower is still inadequate. Delivery of reinforced concrete and metal components for the contact network, traction substations, technical-service buildings and housing is not being made in complete sets. The annual construction-installation work plan for the first six months was carried out by 34.5 percent on Bira-Arkhara sector and by 36.4 percent on Orsk-Orenburg sector.

Start-up projects lack sufficient reinforced concrete supports and, in particular, rigid foundation cross beams and anchors. "Windows" are not always granted according to the agreed-to schedule, and in turn, they are not always used by construction workers. Work productivity in the "windows" is low. During the first half of the year, only 992 km of the 1,839 km of contact network set in the assignment was released for installation.

We need to install about 50,000 contact network supports and 3,200 rigid cross beams at start-up facilities. As of 1 July, only 32,000 and 956, respectively, had been installed. In order to finish the work no later than September, as is anticipated in the joint Ministry of Railways and Ministry of Transport Construction measures, we must install at least 6,000 supports and 750 rigid cross beams a month.

It must be said that the failure to finish track work on time is hampering us. Of the 29 stations at which it is being done, 18 were to have been finished in June, and only seven actually were. Things are going very badly on the Orsk-Orenburg sector.

The situation is no better with regard to building and installing traction substations. Only five of 10 were released for installation on schedule. The picture is the same with regard to electric interlocking, communications buildings and amplification installations, locomotive facilities, housing and other facilities.

Some 3,080 km of contact network must be installed at start-up facilities. As of 1 July, 959 km had been unrolled and 795 km had been adjusted. At this rate, we will succeed in carrying out only half the assignment by the end of the year. And even more installation work must be done on the contact network in building second tracks on single-track electrified lines.

It is thus clear that the number of contact network installation brigades for start-up electrification projects must immediately be increased at least two-fold.

It must be said that there is no smooth, precise interaction between railroad and construction workers in a number of places. There are complaints against the railroads for failing to follow schedules for granting "windows" and against construction workers for refusing "windows" and failing to meet output norms. Unfortunately, there were fewer "windows" in June and July on Arkhara-Vira, Karaganda-Mointy and Orsk-Orenburg sectors due to the increased traffic. This naturally was reflected in the rates of construction and installation on the contact network.

In a number of instances, things were held up by failures to apply to have land set aside, issue timber-cutting permits, make sites available and supply documentation. At some projects, there is not enough equipment, especially sanitation, communications, STsB and power.

Student construction detachments and students getting hands-on experience from vocational-technical schools and tekhnikums work at electrification projects in the summer. Their help must be used as efficiently as possible, with maximum return. We will need the smooth, rhythmical work of all subdivisions of the construction-installation organizations and the railroads everywhere. That will be our guarantee of success.

11052
CSO: 1829/338

BETTER COORDINATION, EFFICIENCY SOUGHT AT TALLINN PORT

Moscow PRAVDA in Russian 8 Jul 81 p 2

[Article by Tallinn correspondents O. Dronov and D. Klenskiy: "A Tight Know"]

/Excerpts/ Whether it is day or night, the pace of work at the Tallinn commercial seaport is at maximum intensity. There is no respite in winter, either—after all, the port does not freeze up. Millions of tons of cargo are delivered to and taken away from here by about 2,000 domestic and foreign ships the year round. What doesn't the oldest port handle--it is eight centuries old. Metal and paper, coal and grain, cement and sugar, machinery and oranges, petroleum products and cocoa beans, refrigerators and mahogany logs....

The export-import "geography is vast: the countries of Europe and Africa. An arm of the Trans-Siberian Container Line runs to Tallinn. Another characteristic of the port is that from time immemorial it has been huddled on a small spot on the coast; there is nowhere to expand--it is around the city. They are trying to compensate for the difficulty here by renovating the docks and refitting them with the most modern equipment.

"I think we were already at the limit of our capabilities," recalls A. Lukoshkin, captain of the port and chairman of the coordinating group of the Tallinn transportation center. "But here the Leningrad workers' example was like getting our 'second wind.' What have we already succeeded in achieving by incorporating their experience? The transportation center's throughput has increased appreciably in 3 years without additional substantial capital investments and with the previous number of workers. More than half of the export-import cargo is being handled in accordance with the direct alternative ('ship to railway car' or the opposite)."

The "second wind" was gained through better cooperation among workers in related fields. More than 3 years ago, as in Leningrad, they established a unified transportation center here consisting of the Estonian Steamship Company, the Baltic Railroad, the Tallinn office of the All-Union Association "Soyuzvneshtrans" and the trucking administration of the republic's Ministry of Motor Transport and Highways. At first there were many difficulties in coordinating the partners' interests and in organizing an analysis of the flow of data with the aid of a computer, making it possible to select the most efficient solution to operational problems. All this is now coordinated in the transportation center's continuous plans and schedules of operation.

But putting them into effect required reorganization of all units of the transportation production line in a new way. The port itself, to begin with. What has changed here? Tallinn longshoremen and machine operators long have had a reputation for their skill and have time and again been winners in sectorial competition. But the most important thing for them was the gross volume of loading and unloading operations. As an example, the layover of a railway car or motor vehicle at the dock or a ship at a wharf disturbed them very little. Now these indicators are conditioned by a contract agreement of the consolidated brigades of longshoremen.

In a word, there are changes for the better at the docks. But the port workers themselves are not inclined to overrate them. They are convinced that they can achieve much better results. In fact, there are still serious interruptions, especially in handling ships with imported cargoes. Sometimes the captains, tired of waiting their turn, complain: we are waiting, they say, not for the weather at sea but on shore.

Here is something for managers of the Estonian Steamship Company and the association of the Sevzapflot /Northwestern Basin Administration/ and the Ministry of the Maritime Fleet to think about. It is well known that not only Tallinn, but other Baltic ports as well, find themselves in a difficult position now—their throughput often is lower than the flow of cargo, which has increased considerably. The opportunity exists to regulate the processing of ships more efficiently, all the same, in the opinion of specialists.

Another important link in the Tallinn transportation center is the railroad. It is true that they have succeeded in improving the utilization of rolling stock through coordination of the activities of workers in related fields. Nevertheless, tens of thousands of tons of valuable cargoes lie in warehouses or on open platforms for months. The port workers' orders for empty cars are barely filled by 60 percent.

Of course, railroad workers have quite a few of their own difficulties. However, they often are aggravated because of flaws in operational planning. Under the agreement concluded, the plan-schedule should become the basis for activities of all workers in related fields. The port's computer center works out its plan for a 10-day period in advance.

The ties between the port and the "Tallinavtotrans" [Tallinn Motor Transport] Association are stronger. Over the 3-year period the motor vehicle drivers took upon themselves a flow of cargo twice as large as previously. All the same, once in a while their movement comes to a standstill. Here is one of the "brakes"—by not defining requisitions more precisely, the dispatchers send drivers to the docks, but they are not expected here, and the vehicles stand idle.

Those we spoke with in Tallinn have admitted that only the first steps have been taken to work "in the Leningrad manner." For the present, the plan-schedule has not found the required strength for each of the workers in related fields and departmental jurisdiction [vedomstvennost'] is being overcome with difficulty. Obviously, the role of the transportation center's coordinating council must be increased to resolve not only current problems, but future ones as well. In the meantime, they are avoiding them. The problem is becoming aggravated, let us say, by the assignment of personnel at the port. Especially longshoremen and machine operators. Their turnover has jumped up to nearly 17 percent already. Railroad workers do not have enough persons to put the trains together [sostaviteli] or to accept them [priyemosdatchiki]. How can this problem be helped? First of all, plans for the collectives' economic and social development must be coordinated. More attention must be devoted to providing housing for workers. The headquarters of the transportation center under the Tallinn party gorkom has been called upon to assist in this.

8936
CSO: 1829/351

DEVELOPMENT OF CARGO FACILITIES ON SMALL RIVERS NEEDED

Moscow RECHNOY TRANSPORT in Russian No 7, Jul 81 pp 5-6

/Article by V. Zachesov, candidate of technical sciences and department head, NIIVT /Novosibirsk Institute of Water Transportation Engineers/: "Shipping Cargoes on Small Rivers"/

/Text/ The regions of Siberia and the Far East in the country have a poorly developed network of land transportation. A significant role is being played in the economic life of these regions by small rivers, which in most cases are the basic and even the only means of transporting mass cargoes.

There are 218 rivers, canals and lakes in the category of small waterways in the basins of Siberia and the Far East. Their overall length is 38,700 kilometers.

Cargo was shipped on 82 small rivers here in the 1980 navigation season. The total volume of shipments amounted to 20.8 million tons, with a freight turnover of 2.5 billion ton-kilometers.

The growth rate of cargo shipments on small rivers is significantly higher than on the main waterways. In the 1960-1978 period, shipment of cargo in the RSFSR MRF /Ministry of the River Fleet/ system increased 2.48 times (3.29 times in the steamship companies of the eastern basins), at the same time that shipments on small rivers during this period increased 3.89 times (but 6.46 times in the eastern basins). This situation requires more attentive consideration of the problems of transport utilization on small rivers, the organization of regular navigation here, and reinforcement of the material and technical base of river transport.

The low-tonnage transport fleet in steamship companies of the eastern basins is characterized by a large number of different types. Ships of 80 different designs and versions, numbering about 1,200 units with an overall tonnage of 126,000 tons, are operating on the small rivers of Siberia and the Far East. The basic nucleus of this fleet has a full-load draft of 0.76 to 1.1 meters.

Analysis of the cargo fleet on small rivers in the eastern basins shows that a significant group of ships has been in operation for over 10 to 20 years. Many of them already have become dilapidated. If the situation is not changed radically, the total number of such ships will have reached 60 percent by the end of the 11th Five-Year Plan.

The lack of a sufficient number of low-tonnage tankers attracts attention. This reduces the opportunity for delivery of petroleum products in bulk [nalivom] to points on small rivers where there are no oil pumping facilities and shippers and river workers are forced to deliver petroleum products in containers, which makes their shipment significantly more expensive.

Under the conditions of the continuously increasing requirement for cargo shipments on small rivers, the problem not just of a more intensive, but a more qualitative replenishment of the low-tonnage fleet should be resolved. This should be taken into account in developing a network of the types of ships for construction, bearing in mind the inclusion in it of new types of transport facilities.

The level of the docks' technical equipment for unloading on small rivers remains extremely low: floating cranes with a hoisting capacity of 3 to 5 tons, several crawler-mounted cranes, excavators and bulldozers constitute the basic mechanization facilities here. The United Lena River Steamship Company, in particular, has an average of less than one crane per moorage. On the Olekma, Anabar, Markha, Maya and other rivers there is no crane mechanization at all, and ships are unloaded by hand on a shore without equipment. The situation with regard to the equipment of docks on small rivers in other basins is no better, either.

The degree to which BUP's [basin administrations] and technical sections are equipped with a specialized fleet for maintaining the necessary navigation clearances is low.

Construction of permanent or temporary mooring installations is important for the organization of cargo unloading at points on small rivers.

Significant reserves for reducing the production cost of shipments on small rivers lie in improvement of the organization of the transportation process. Shipment of cargoes by a low-tonnage fleet with a carrying capacity of less than 600 tons for a distance of over 800 kilometers is inefficient, but a high-tonnage fleet cannot reach destinations assigned under the navigation conditions on small rivers. In this regard, cargoes are being shipped from the points of origin on a main waterway in high-tonnage ships and component units to a cargo storage (transshipment) base, where they are subsequently delivered to destinations by the low-tonnage fleet.

Calculations have confirmed the economic efficiency of such a scheme for organizing shipments to points on small rivers, especially in the second navigation period. Organization of a cargo storage (transshipment) base for delivery on small rivers with a cargo turnover of 80,000-100,000 tons provides for a reduction in the production cost of delivering cargoes of up to 25 percent. Such bases can be set up in the region of operating ports and wharves. For example, in the Western Siberia River Steamship Company, the Kargasok pier for serving the Vasyugan, Nyurol'ka, and Tym Rivers; the port of Kolpashevo for delivery of cargoes on the Chulym, Chaya and Ket'; the port of Nizhnevartovsk for points on the Vakh River.

In the Irtysh River Steamship Company, the port of Salekhard for shipment of cargoes to points on the Nadym, Poluy, and Shchuch'ye, and partly on the Pur and Taz; and the port of Surgut for delivery of cargoes on the Agan and Trom-Agan. In the United Lena River Steamship Company, the pier at Sangar for serving points on the Vilyuy, (Lungkha), and Markha; the wharf at Khandyga for delivery of cargoes in the basins of the Amga and Maya Rivers, and the like.

Calculations have been made in the NIIVT on the efficiency of using ships equipped with crane machinery for certain small rivers in the eastern steamship companies. Analysis of the calculations has shown that expenditures incurred in delivering cargoes on these ships, compared with delivery on ships without the cranes, are not reduced significantly. This is explained by the low utilization of crane machinery over a period of time and the limited technical capabilities of ship cranes.

In the opinion of the institute's specialists, another form of organizing loading and unloading operations with the use of special mechanization is more efficient on small rivers. A crawler crane or truck hoist is placed on a barge with a carrying capacity of 50 tons. When needed this barge proceeds from the port of registration to points on small rivers attached to the appropriate transshipment bases. After unloading, the barge-crane returns to the base port or remains on the small river for the time needed. When the fleet is absent, the truck hoist or crawler crane is used in accordance with its primary purpose. The limits of adopting such a servicing method require accurate specification, together with solution of the problem of the expediency of building ships with cranes for small rivers.

One of the trends in increasing the shipment of cargo on small rivers is expansion of the scope of river transport use by opening up new sections of internal waterways. Such a course is necessary and economically expedient under conditions in Siberia and the Far East. The necessity stems from the overall condition of transportation service in regions which are distant from the basic mainline rivers. Recently opened extensive deposits of oil and gas in the West Siberian industrial complex are located in regions which still are almost inaccessible for all forms of transportation, aside from river transport. The expediency of opening up new sections of internal waterways is determined by economic prerequisites: the shipment of 1 ton of cargo to the northern regions of Tyumenskaya Oblast by river transport is 10 to 15 times less expensive than by motor vehicle, and nearly 25 times less expensive than by air.

In the 1976-1980 period, the NIIVT conducted a route inspection of a number of undeveloped sections of rivers in the West Siberian region, particularly the rivers Pur, Taz, Khadutte, Nyda, Yuribey, Sabetta-Yakha, Tadybe-Yakha, and Kazym, with the objective of determining transportation capabilities and the organization here of temporary or regular navigation. Thus far institute employees have explored about 2,000 kilometers of waterways, conducted surveys on dozens of rivers, made up maps and diagrams for each river, and established the clearances for navigation and rates of flow on individual sections of rivers.

The Irtysh River Steamship Company, utilizing materials of the NIIVT, is successfully shipping cargoes (up to 400,000 tons during the navigation season) along new sections of small rivers and is continuously expanding the territorial limits of the regions in the West Siberian industrial complex which are being served by river transport.

Organization of regular navigation on the recently opened sections of small rivers requires maintenance during the operating period of the appropriate clearances for navigation. To carry out this work with proportionate participation, it is advisable to enlist the facilities of the concerned ministries and departments. Construction of temporary or permanent loading and unloading docks also should be organized with proportionate participation. There are examples of such operations organization: construction of a crib retaining wall in Nyurba and a moorage in Verkhnevilyuysk, carried out with the efforts of the Yakutsk port. Expenditures for construction of these moorages have been apportioned among the organizations concerned: the "Yakutsksel'stroy" /expansion unknown/ association, the "Yakutskavtodor" /expansion unknown/ and Goskomsel'khoztekhnika administrations, the Rospotrebsoyuz /Union of Consumers Societies of the RSFSR/ and the United Lena River Steamship Company.

The accelerated pace in the development of cargo shipments on the small rivers of Siberia and the Far East is the result of necessity. However, the existing system of evaluating the work of the fleet on small rivers does not stimulate development of cargo shipments in these regions. The more intensively the new sections of small rivers are opened up and the more cargo shipments on them are increased, the worse the overall operational and economic indicators for the work of the fleets of steamship companies become and the more complicated it is for collectives to carry out planned tasks to increase labor productivity and reduce the production cost of shipments.

Obviously, in planning the work of the fleets of these steamship companies, it is necessary to take into account the degree of complexity in delivering cargoes. This can be done through a system of coefficients making it possible to take into account the labor intensiveness for shipments on small rivers. Such a system of coefficients can be adopted when the new classification of internal waterways developed by the NIIVT is incorporated.

Implementation of the measures proposed to improve cargo shipments on the small rivers of Siberia and the Far East will contribute to the development of these regions' productive forces and lead to a further increase in the role of river transport in serving the different sectors of the national economy.

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8936
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MISCELLANEOUS

EXPANDING TRANSPORT SERVICES IN TURKMEN SSR

Ashkhabad TURKMENSKAYA ISKRA in Russian 8 Aug 81 p 2

[Article by V. Filatov, instructor of Transport and Communications Department of CC CP of Turkmenistan: "Economic Review: Improve the Operation of Transport"]

[Text] In carrying out resolutions of the 26th CPSU Congress, toilers of Turkmenistan's transport enterprises and organizations are mobilizing efforts toward successful fulfillment of planned goals and socialist pledges made for the first year of the 11th Five-Year Plan. In the first half-year they transported more than 1.2 million tons of national economic freight in addition to the plan.

Workers of the steel main lines made a great contribution to this success. Competing in honor of All-Union Railroad Worker's Day, they transported more than 300,000 tons of various freight above the plan and in so doing saved 1,397 tons of diesel fuel. The competition initiators--the collective of the Chardzhou department of the Central Asian Railroad--distinguished itself in particular in the key watch. Productivity of a diesel locomotive and railcar rose by two percent. Over 8,000 heavy trains were run, which transported 3.3 million tons of freight above the norm. Based on results of All-Union Socialist Competition in the second quarter, this collective was awarded the monetary second prize of the Ministry of Railways and the Central Committee of the Railroad Transport Workers Trade Union.

The collective of the Mary Department of the Railroad achieved good indicators in accelerating railcar turn-around time. The average time of railcar layover for one freight operation was reduced here by 24 percent, which considerably accelerated their run.

The collective of the Ashkhabad Station Locomotive Depot was awarded a Challenge Red Banner and monetary first prize of the Ministry of Railways and the Central Committee of the Sector Trade Union for successes achieved in the second quarter of the year. By using advanced methods of diesel locomotive repair, depot workers turn them over with the first request and with a guarantee of quality. In this manner they achieved the greatest output of diesel locomotives in the sector following upgrading repairs.

The specific nature of railroad work is such that success in the matter often depends not only on the railroaders, but also on the actions of workers in related fields--transport shops of associations, enterprises and motor transport managements. It is therefore very important to strengthen the coordination and labor cooperation of all participants of the transport conveyor, arrange uniform industrial processes and make wide use of the achievements of science and technology and the experience of leaders and innovators of production in organizing shipments.

The experience of the Leningrad Transport Center is widely known in this respect. The experience of collectives of L'vovskaya Oblast enterprises is producing a great effect. It includes a complex of measures for the development and adoption, with consideration of available capabilities, of progressive industrial processes for processing rolling stock; a reduction in car layovers for freight operations; maximum use of their load-carrying capacity and holding capacity; an improvement in planning and rationalization of shipments; an intensification of routings; and an improvement in car upkeep.

Motor transport is a connecting link between shippers and consignees of freight. Judging from results of the first half-year, the Republic's motor transport personnel worked rather well, overfulfilling plans for freight turnover and for shipments of national economic cargoes. Over 700,000 tons of additional freight was shipped.

At the same time, there are substantial deficiencies in the work of the Republic's transport conveyor. The level of operational work and utilization of rolling stock still is low in all departments of the railroad. Collectives of the Ashkhabad and Mary departments did not meet the plan for freight turnover for the first half-year. The average daily productivity of diesel locomotive and railcar and the sector speed here are much below that planned. Layovers of transport facilities for loading and unloading operations are still high. The reasons for this are the unsatisfactory status of depot facilities and spur tracks and the insufficient level of mechanization of loading and unloading operations. As a result, the average car layover on spur tracks for six months of this year was 1.46 hours above the norm. Those at fault for excess layover of rolling stock were penalized in the amount of some one million rubles. In other words, 5,000 cars were lost and a large amount of freight was not delivered to its destination.

The average daily unloading of cars remains at last year's level on an average for the Republic. It rose somewhat in the Ashkhabad and Chardzhou departments of the system. But in the Mary Department 16 cars less per day are being unloaded.

An important reserve such as unloading cars at night and on days off is still being poorly used. Night unloading for three departments of the railroad comprises only 24 percent with a norm of 40. Matters are especially not well in enterprises of the Ministry of Construction, Ministry of Rural Construction, Ministry of the Construction Materials Industry and others. For example, cars lay over an average of 10 hours or more instead of the norm of 2.55 hours on spur tracks of enterprises of the Ministry of Construction Materials Industry. The enterprises paid more than 200,000 rubles in fines for excess car layover. Cars laid over for unloading an average of 20 hours each at the Ashkhabad Glass Combine.

Departments of the system have not yet succeeded in achieving a fundamental improvement in safekeeping of the freight being shipped.

There are substantial deficiencies in the work of motor transport. The low use factor of trucks and their runs is causing alarm. The vehicles essentially are not operating in the second shift. The material and technical base is being improved slowly.

Summer is the most intensive and responsible period for transport. The tempo of freight and passenger movements rises. Line repair and construction work is carried on across a broad front. And today high composure and very strict discipline is required of every transport enterprise worker no matter what post he holds.

The experience of Leningrad transport workers is being slowly adopted in the Republic and the method of work of enterprises of rail transport and industry of L'vovskaya Oblast for the effective use of cars is being applied very timidly. Results of the half-year also indicate that in a majority of cases there is no job contact between motor transport and railroad personnel, and agreements with related workers usually bear a formal character. The coordination councils of related subunits and enterprises are taking no effective steps to achieve cohesive work.

It is apparent that party and trade union organizations and the business executives must make a more exacting analysis of how matters stand with adoption of the experience of Leningradites and transport workers of L'vovskaya Oblast, and must take steps for a further strengthening of coordination among collectives of related types of transport and industrial enterprises.

The main task today is to elevate the work of toilers of the steel main lines, motor transport personnel and workers of other types of transport to the level of growing demands. Primary attention must be given to increasing the throughput capacity, carrying capacity and processing capacity of transport. It is the obligation of heads of railroad departments and the duty of all production collectives to improve operational work resolutely. This concerns above all an acceleration in the turnover of cars, a reduction in rolling stock layovers, and an increase in the level of routing and direct shipments in car turnover. Only on this condition is it possible to cope with the high socialist pledges of 1981.

A precise rhythm for the transport conveyor.

6904
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MISCELLANEOUS

BRIEFS

PIPELINE BATTALION EXERCISE--Orchards already were in bloom in the valleys, but here in the mountains at an elevation of some 2,000 m, it was either a blizzard blowing or the dank, dense fog descending. But an exercise is an exercise: Personnel of the separate pipeline battalion commanded by Engr-Maj P. Yeremenko were laying a pipeline. A difficult task fell to the battalion's lot. Many difficult kilometers had to be covered across canyons and mountain ridges. But the pipeline personnel coped successfully with the assigned mission. They laid two steel threads in less than three days and provided diesel fuel and gasoline to subunits operating in the mountains. Pipeline personnel of the subunit commanded by Capt I. Fedotov distinguished themselves on the pass. They performed their work while bettering the established norms. The mechanized assembly teams headed by Sr Lt V. Dobrovol'skiy and Lt V. Devkin and the pipelaying team headed by Sgt M. Konyushenko worked especially diligently. They earned outstanding grades while working understrength. Battalion pipeline personnel took yet another step forward in this exercise toward the cherished goal of winning the title of outstanding for the subunit. [By Engr-Maj A. Panchenko of Red Banner Transcaucasus Military District] [Text] [Moscow KRASNAYA ZVEZDA in Russian 4 Apr 81 p 2] 6904

SHIPS FOR GASLINE CONSTRUCTION--Baku, 23 Mar 81. An unusual caravan of vessels is ready at the local pier for a trip: the specialized pipelayer "Suleyman Vezirov," a powerful tug and two tankers. They will set off over the Caspian and Volga to the vicinity of the Kuybyshev water reservoir, where they will assist builders of the Siberian-Center gas pipeline in laying eight steel "threads," each 5½ km long, on the riverbottom. Although this is the most difficult sector of the construction site, the Baku personnel pledged to reduce the work deadlines by a great deal. [By PRAVDA correspondent] [Text] [Moscow PRAVDA in Russian 24 Mar 81 p 6] 6904

TRANSPORT CONVEYOR--Vladivostok. It has been ten years since the beginning of operation of the gigantic container line between countries of Western Europe and Southeast Asia. The cargoes of foreign consignees go by the shortest main transport line, from the port of Leningrad by rail to Vladivostok. This line extends 13,000 km and is highly popular with commercial firms. Everyone notes the speed and reliability of freight delivery and the complex of services along its entire route--from the sender's door to the consignee's door. Working in close cooperation, the navymen, port workers, railroad workers and workers of Vneshtrans [exact expansion unknown] assured its uninterrupted functioning. There is a line in the "Basic Directions": "Raise the effectiveness of the export of transport services." The Trans-Siberian container line has reserves for this. The estimated time for delivery of containers now is 30-31 days. Experimental routes recently were traveled from the shores of the Pacific to Leningrad in 11 days. [By IZVESTIYA correspondent A. Pushkar'] [Excerpts] [Moscow IZVESTIYA in Russian 31 Mar 81 p 2] 6904

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